Flight

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE AERO CLUB OF THE UNITED KINGDOM.

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FLIGHT.

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THE ELEMENTS OF AVIATION.

Two letters will be found in our correspondence columns this week which are singularly appropriate to the subject selected for editorial comment on this occasion, since both "Ignoramus" and Mr. A. P. Portway ask us to publish special articles of an elementary and basic kind explaining the broad principles of aviation. The two requests do not relate to precisely the same thing, inasmuch as theory and practice are referred to respectively; but there is nevertheless no need for us to draw any distinction whatever between them here, inasmuch as we fully recognise that both our correspondents are voicing the desires of hundreds of readers. One reason why we welcome the two communications at this particular time is that their receipt happens to coincide with the publication in FLIGHT of our first article of this broadly elementary nature. But, although we are taking this opportunity of drawing attention to "How Men Fly," and of assuring our correspondents that similar articles will continue to appear from time to time as a regular feature of our columns, the main point upon which we wish to speak just now is much more general in character. It affects, in fact, the extent to which it is possible for any journal to satisfy all the individual demands that are apt to be made upon it; and the reason why we deem it advisable to deal with this very broad subject at the present moment is to forestall any exceptional requests that might be made to us by those who do not stop to think. Some enthusiasts taking up a new subject for the first time are apt to imagine the editorial "we" imbued with almost supernatural knowledge by virtue of "our" connection with that marvellous "cold print," which proverbially cannot lie; while other ardent seekers after facts on which to start their own researches, are prone to overlook the essential difference between a journal and a text-book. We would, therefore, in all humility, remind readers of FLIGHT that if the editorial "we" now knew the best way to fly, and how to construct machines in the way that they will be built at the end, say, of ten, five, or even two years from now, the probability is that "we" should be busying ourselves in the shops and in the air rather than with the inkpot. Similarly, too, referring to text-books, "we" appear week by week for all and sundry; and our primary duty is to keep every reader conversant with the very latest doings and aspirations of the day. There is, of course, a vast amount of already-acquired knowledge that needs to be imparted, before an intelligent interest can be taken by anyone in the happenings of the moment; but that knowledge will continue to be required by every fresh reader, as he enters the field of flight, for quite a long period yet to come; and hence our programme must be drawn up accordingly. As we pointed out a few weeks ago, the wonderful science, of which the present generation has been so fortunate in seeing the dawn, and with which we are exclusively concerned in these columns, constitutes a new art and a new industry of which very few people know overmuch at present. FLIGHT is growing up with the flying era, and its mission is a great one. As regards the aeronautic student, whether he be a prospective user or constructor, no long-continued serial can replace for him the reading-up of text-books written from certain specific standpoints. But rather is it for us to bring before his notice the various views that are held by different authorities on the subject, to draw his attention to those works in which abstract questions are thrashed out by reliable men in greater detail, and to record failures and successes, with their causes, long before that all-important information can find its way into any text-book. That, then, is a plain statement of what we deem to be a reasonable—and, indeed, the only possible—policy.

HOW MEN FLY.

A POPULAR ACCOUNT OF SOME OF THE MORE INTERESTING FUNDAMENTAL PRINCIPLES OF ARTIFICIAL FLIGHT.

Now that such a much larger section of the general public is taking an interest in aviation, there must be a greatly increased number of readers who are searching for some brief and elementary explanation of the laws of flight in order that they may more readily grasp the significance of the practical work which is going on at the present time. Already there is a fair amount of literature on the subject in the form of text-books, which should certainly be read by such as go into the matter deeply, but our object in this article is to write something which will appeal more particularly to those who have neither the time nor the inclination to worry with details, but who wish, nevertheless, to have a general idea of the main theme and to know about one or two of the more interesting specific cases.

It will have been perfectly evident to everyone that man's conquest of the air has been far more the result of experiment than theory, and even in the earlier days —before practical flying machines were constructed— pioneers were then devoting the greater part of their time to construction rather than mental study. Among the earliest workers, yet living, was Sir Hiram Maxim, who has just published a little book called "Artificial and Natural Flight" (Whittaker and Co., 5*s*.), containing the first and only account of his experiments. Sir Hiram, as all the world knows, once made a machine which succeeded in lifting itself off the ground and flying for a short distance. This was in the days before petrol engines had been developed, and the inventor, in common with others, found himself most seriously handicapped by the weight of his steam machinery. Apart from this *magnum opus* by which he is best known, however, Sir Hiram Maxim made a lot of minor experiments connected with the effect of the wind on objects of different shape, and it is these tests which form, in our opinion, the most interesting portion of his afore-mentioned book. They touch upon the fundamental principle of flight, and we purpose using them as a basis of reference in this article. The data itself is unfortunately set forth in the book, we think, in a somewhat confusing manner, but we have re-tabulated it to a considerable extent for our purposes, and have prepared little sketches of the objects, so that the significance of the figures may be more readily apparent to the reader. Incidentally it may be mentioned that Sir Hiram Maxim never had time either to finish his tests or to properly check those that he had made; but although this essentially detracts from their intrinsic value, it does not affect their general interest, and the book itself, taken as a whole, is very readably written in simple language, and should certainly be read by all who are curious about the author's early work.

Wind is, as everyone knows, air in a state of motion; but the effects which it produces upon objects against which it blows may be reproduced exactly if the objects themselves are moved through still air at an equivalent speed. If, therefore, it is desired to make experiments on a small scale, the model may either be projected through the air or be subjected to a draught, as may be most convenient, without affecting the nature of the resultant information. Sir Hiram Maxim carried out both classes of experiment, and his object was to find out the relative effects produced by winds of known velocity upon objects of different shape. Wind blowing against an object exerts pressure upon it, the nature of which is, so far as an ordinary observer's everyday experiences would go to show, that of a direct thrust. The pedestrian in the streets feels that he is being blown backwards by a gale, the motorist in a fast car feels the same effect in calm weather, and the occupants of a balloon, who feel no effect at all, know that they are *drifting* from the same cause. "Drift" is the term which Sir Hiram Maxim employs to denote this thrust or pressure of the wind in the direction of its motion—which is commonly supposed to be horizontal—and it is useful to have an alternative expression for "wind resistance," which has hitherto served the same purpose in automobile terminology.

There is another, and far more important, attribute of the wind than "drift," however, and that is its capacity for *lifting* certain objects, while it is apparently blowing straight *across* them. Thin boards or sheets of light stiff material placed edge-on to the wind will be lifted bodily in this way when their front edges are but a fraction higher than their rear edges; and if, instead of being flat, these planes are slightly cambered, the wind will still lift them while their front and rear edges remain on the same level. To engineers and others who understand all about "component forces," these facts may not seem extraordinary, but to the lay mind they are wonderful enough, because circumstances do not commonly arise in everyday life to demonstrate the existence of the underlying law, which is, moreover, the fundamental basis of flight as practised by man to-day.

The aeroplane is a structure devised to carry a pilot, propelling machinery, and a large expanse of surface formed by thin planes. These latter being forced through the air, extract the lifting power from the draught thus artificially produced across them, and so cause the whole machine to rise bodily off the ground and fly. Flight is due solely to this principle, and is maintained over a long duration solely by virtue of keeping this force alive. The force is created by motion and cannot exist without it; consequently if there is no wind, an artificial draught must be produced by forcing the flying machine up into the air. A kite is an example of a machine which soars by virtue of natural wind. Another important point to be borne in mind is that the direction of the wind or draught which produces the lifting effect must essentially be contrary to the direction in which the machine is flying. If, therefore, it is desired to fly *with* any natural wind which may happen to be blowing at the time, the machine must be forced through the air at a greater speed than the velocity of the wind, so as to create an artificial draught in the *opposite* direction.

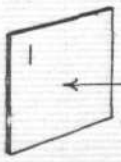
When wind blows across a suitably designed surface or plane placed practically edge on to it, it exercises its lifting effect with comparatively little tendency to make the object *drift*; but if the front edge of the plane be tilted up a little more, the drift becomes considerable indeed, although only a comparatively small increase may have taken place in the lifting power by way of compensation. When the plane is set vertical to the wind the drift is, of course, at its maximum and the lifting effect *nil*; so between these two extremes there are numberless relative values of lift and drift available. Naturally the aviator wants the most lift he can obtain for a minimum drift, and this quest opens up a vast and interesting field for useful experiment. It was this "spade-work" which Sir Hiram Maxim was engaged upon in his early

SIR HIRAM MAXIM'S "LIFT AND DRIFT" EXPERIMENTS.

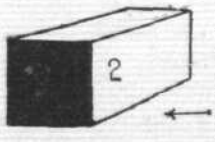
Diagram No.	Test Piece. Width.	Test Piece. Inclination.	Wind. Velocity.	Results. Lift.	Drift.	Ratio. Lift : Drift.
	ins.		m.p.h.	lbs.	lbs.	
1	0	90°	49	0	2	—
2	2	0°	49	0	5·16	—
	2	0°	40	0	4·56	—
3	2·83	0°	49	0	5·47	—
4	2	C°	49	0	2·97	—
	2	0°	40	0	2·8	—
5	9	0°	40	0	0·78	—
6	9	0°	40	0	1·22	—
7	9	0°	40	0	0·28	—
8	9	0°	40	0	0·42	—
9	9	0°	40	0	0·23	—
	9	1 : 4½	41	4·45	0·47	9·5 : 1
	9	0°	40	0	0·59	—
10	9	1 : 4½	41	2·54	0·76	3·3 : 1
	12	0°	40	0	0·19	—
	9	1 : 2¾	41	7·08	3·23	2·2 : 1
11	9	1 : 3 9/10	41	4·53	0·78	5·8 : 1
	9	1 : 6 7/10	41	3·37	0·5	6·8 : 1
12	—	0°	—	—	—	—
	12	0°	40	0	0	—
13	12	1 : 20	40	3·98	0·3	13·1 : 1
	12	1 : 16	40	4·59	0·53	8·7 : 1
	16	1 : 10	41	9·94	1·12	8·9 : 1
14	16	—	41	10·34	1·23	8·5 : 1
	12	1 : 14	41	5·28	0·44	12 : 1
	12	1 : 12	41	5·82	0·5	11·6 : 1
15	12	1 : 10	41	6·75	0·73	9·2 : 1
	12	1 : 8	41	7·75	1·0	7·7 : 1
	12	1 : 7	41	8·5	1·25	6·8 : 1
	12	1 : 6	41	9·87	1·71	5·8 : 1
	12	1 : 12	41	6·12	0·54	11·3 : 1
	12	1 : 12	41	6·41	0·56	11·5 : 1
	12	1 : 16	41	5·47	0·37	14·8 : 1
	12	1 : 10	41	6·97	0·7	10 : 1
16	12	1 : 8	41	8·22	1·08	7·6 : 1
	12	1 : 7	41	9·94	1·45	6·8 : 1
	12	1 : 6	41	10·34	1·75	5·9 : 1
	12	0°	41	2·09	0·21	10 : 1
	12	−1 : 18	41	0	0	—
	8	0°	40	1·56	0·08	19 : 1
	8	1 : 20	40	3·62	0·21	15 : 1
	8	1 : 16	40	4·09	0·26	16 : 1
17	8	1 : 16	47·33	5·0	0·33	15 : 1
	8	1 : 14	40	4·5	0·33	14 : 1
	8	1 : 12	40	5·0	0·43	12 : 1
	8	1 : 10	40	5·75	0·60	9·6 : 1
	8	1 : 8	40	6·75	0·86	7·9 : 1

SIR HIRAM MAXIM'S EXPERIMENTS. Table of Results. The diagram numbers refer to the illustrations. All test pieces were 3 ft. in effective length, that is to say, they were subjected to a draught 3 ft. wide. The inclination is the slope of the plane to the horizontal wind, the front edge being raised except in the case of negative inclination. Figures are not available for No. 12, but the lift was positive with zero inclination. The results are expressed in total lbs. lift and drift for the full 3 ft. of each test piece, having a width as stated in the table. The width is the distance from front edge to rear edge, measured through the section.

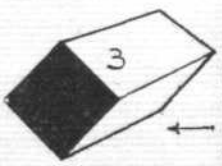
DESCRIPTION OF TEST PIECES.



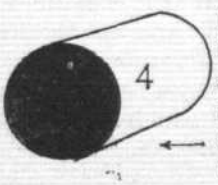
No. 1. Plain board, 6 ins. square, placed vertically in the wind.



No. 2. Bar of square section (2-inch edge) set so that the wind blows directly on to one face.



No. 3. Same bar as No. 2, set edge on to the wind.



No. 4. Round bar having a cross-sectional diameter of 2 ins.

No. 5. Bar having a kite-shaped cross-section. The bar is 9 ins. wide, the distances from each edge to the point of maximum thickness being 6 ins. and 3 ins., respectively.

No. 6. Same bar as No. 5, but set with the thin edge to the wind, in which position it offers much more resistance.

No. 7. Bar of similar proportions to No. 5, but having curved surfaces.

No. 8. Same bar as No. 7, but placed with the thin edge to the wind, in which position it offers far greater resistance.

No. 9. Bar having a bottle-shaped section of similar proportions to No. 7, than which it offers less resistance.

No. 10. Same bar as No. 9, but with the thin edge to the wind, in which position it offers greater resistance.

No. 11. Bar having a symmetrical elliptic cross-section with sharp edges. The bar is 12 ins. wide, and has less resistance than any of the above shapes. Being symmetrical, the resistance is the same with either edge facing the wind.

No. 12. Bar having a triangular cross-section, fairly deep in the centre and with a rounded top edge. With either of the thin edges facing the wind a decided *lifting* effect is produced.

No. 13. Bar 12 ins. wide representing a flat aeroplane. The underside is flat, and the upper side slightly convex. No resistance is offered to the wind when the bar is horizontal.

No. 14. Bar 16 ins. wide, representing a thin aeroplane. The underside is slightly concave.

No. 15. Bar 12 ins. wide and slightly thicker than No. 14.

No. 16. Bar of the same width as No. 15, but more cambered. When horizontal, the wind still exerts a considerable lifting effect and very slight drift.

No. 17. Bar only 8 ins. wide, which exerts a greater lift in proportion to the drift when horizontal in the wind than does No. 16, but is less advantageous when inclined.

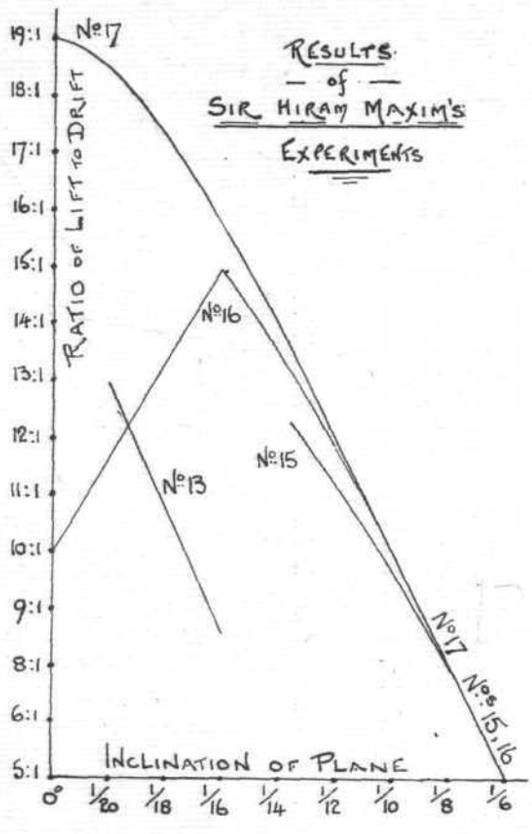
NOTE.—All the above test pieces were tested in the same machine which produced a draught 3 ft. in width; the area upon which this wind played, however, varied with the width of the test pieces. The most effective aeroplane section—that illustrated in No. 17—was 8 ins. wide, the area in this case being 2 sq. ft. The lift produced by this section at an inclination of 1 in 16 was about 2 lbs. per sq. ft.

experiments, hence their interest to students of aviation. So little are the laws relating to the effects of wind rendered evident in the ordinary walks of life that some of the results which Sir Hiram Maxim obtained are apparently contrary from what common sense would have led one to expect. Who, for instance, would think of using the back of a knife blade to cut with? Yet the thick edge of a bar having a kite-shaped section (Fig. 5) offers less resistance to the wind than the thin edge (Fig. 6) of the same bar. Similarly with bars shaped as in Figs. 7 to 10, it is always the thick edges which would be most advantageously placed foremost for the purpose of reducing their resistances when forcing them through the air. It does not, of course, follow that these sections are desirable in themselves, but it is obviously of the utmost importance to know which way round they should go, whenever it is necesssary to use them.

Then there is another extraordinary phenomenon, concerning the bar having a triangular shaped section shown in Fig. 12. Placed as shown in the illustration, with the wind blowing against one of its thin edges, the effect of the draught would apparently be to force the bar *downwards*. Sir Hiram Maxim's experiment, on the other hand, produced the paradoxical result of showing that the bar was *lifted* by a wind blowing in either direction! So, when it is realised that things aeronautic may be so very much unlike what they seem on the surface, it is not difficult to understand how important it is that experiments of this character should be carried out.

Besides his tests with bars of different section, such as might be used for struts and stays in aeroplane construction, Sir Hiram experimented with different forms of aeroplanes, such as are shown by the sketches Figs. 13 to 17. We do not propose to refer to the results at length, because they may be ascertained, by those interested, from the book itself, but there are one or two points which certainly deserve comment. In the case of the plane illustrated in Fig. 13, for instance, it was found when placed level with the wind to have no perceptible lift or drift. That it had no lift may be readily believed, but that it had no measurable drift also, is not only extraordinary but very much opposed to the ideas of those who maintain that the mere passage of the wind when sweeping across the *surface* of an object creates a "skin friction" which forms a very appreciable fraction of the whole resistance. This particular plane had a flat under-side, but the plane illustrated in Fig. 16, was cambered, and it demonstrated the interesting phenomenon of an appreciable lift while its front and rear edges were level with the wind; in fact, it was not until the plane was given a downward tilt of 1 in 18 that it ceased to extract "lift" from the wind.

As we have mentioned elsewhere, the figures relating to these experiments are given in a far from convenient form in Sir Hiram Maxim's book, and we have therefore tabulated those which appear to be the most interesting, and have added some calculations of our own to make the data more complete. In addition, we have plotted a few of the results in the form of a chart, as this is the best method of dealing with figures of this description in order to see what they mean. These curves are not intended to be strictly accurate, nor to represent the whole of the figures in the table; they are merely intended to show the nature of those figures. They represent by their slope the relative values of lift, drift and inclination for the different experimental planes as numbered. They are so incomplete that if they do nothing more than point out the necessity for further experiments they will have served a useful purpose; but, even in their crude form, they still convey many important ideas. A comparison of the different lines, for instance, shows that only No. 17 has a continuous and gradual curvature, and that it is, therefore, of the utmost importance that an aeroplane surface should be the right shape. It must be most disconcerting to the pilot if the relationship between the lift-drift ratio and the inclination changes in an irregular manner, because he would have this to combat against in addition to the variation in the elements themselves. Another interesting point which may be deduced from these curves is that at great inclinations (1 in 6, &c.) all planes have approximately the same drift-lift ratio, which is strangely enough numerically equivalent to the slope of the plane. This apparent law is not in accordance with mathematical theory, and it is, therefore, all the more important that more evidence should be collected as soon as may be. Sir Hiram Maxim's book, in fact, contains a great number of interesting points like this, and they are put before the reader in a simple non-mathematical way, so that even the uninitiated is readily able to grasp their significance.



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A Lecture on Flight.

The Coventry graduates of the Institution of Automobile Engineers have showed their appreciation of the importance of Flight at the present time by devoting their first paper to the subject. This was given by Mr. Joseph A. Mackle, B.Eng., on Tuesday, January 26th.

The lecturer gave an interesting sketch of the work of the many experimenters, from mythical Icarus down to the end of 1908, and devoted the remainder of his paper to the consideration of the main existing types of aeroplanes. In conclusion, attention was drawn to the many features common to both the aeroplane and the automobile, and the prediction was hazarded that in a very few years Coventry will be the centre of a new and important industry, just as it is at the present time the motor centre of the world's greatest motoring country.

A short discussion followed the lecture, and judging from the interest aroused, the subject of Flight and its possibilities will have further attention from this centre next session.

AERO CLUB OF THE UNITED KINGDOM.

OFFICIAL NOTICES TO MEMBERS.

Committee.

IN accordance with the rules, the Committee shall consist of eighteen members. Members shall be elected to serve for two years. One-half of the Committee shall retire annually, but retiring members shall be eligible for re-election.

The retiring members of the Committee are:—Griffith Brewer, F. H. Butler, Prof. A. K. Huntington, J. Lyons Sampson, Stanley Spooner, C. F. Pollock, Capt. Hon. Claud Brabazon, Capt. A. H. W. Grubb, and John Dunville.

Capt. Hon. Claud Brabazon is now stationed abroad, and does not offer himself for re-election.

Any two members of the Club can nominate a member to serve on the Committee, having previously obtained such member's consent. The name of such member so nominated, with the names of his proposer and seconder, must be sent to the Secretary, in writing, on or before Saturday, 27th February, 1909.

Aero Exhibition at Olympia.

The Aero Exhibition at Olympia, held by the Society of Motor Manufacturers under the auspices of the Aero Club of the United Kingdom, will take place in March, opening on the 19th and terminating on the 27th. Members of the Aero Club will be admitted free on production of their Aero Club membership cards. A room will be placed at the disposal of the members during the Exhibition.

Free space will be granted to non-trade members of the Aero Club and the Aero Club League for exhibiting their machines, and applications should be made as early as possible to the Secretary of the Aero Club, 166, Piccadilly, London, W.

Model Flying Machines at Olympia.

It is proposed to organise an exhibit of model flying machines at Olympia in connection with the Aero Exhibition in March. Those desirous of exhibiting are requested to communicate with the Secretary of the Aero Club, 166, Piccadilly, London, W., as soon as possible. Money prizes will be given, and particulars will be announced shortly. Free space will be given to exhibitors.

Gordon-Bennett Aviation Cup.

Mr. James Gordon-Bennett has presented to the Federation Aeronautique Internationale:—

(*a*) An International Challenge Cup of the value of £500 to be competed for by the clubs affiliated to the Federation Aeronautique Internationale.

(*b*) Three prizes of £1,000 each, to be awarded to the winners of the first three contests.

The following special conditions apply to the contest for the present year:

The contest will be held over a circular course of 5 to 10 kiloms. circumference, the total distance to be accomplished by each competitor not to be less than 20 kiloms.

Open to aeroplanes of every type.

Every club affiliated to the Federation Aeronautique Internationale has the right of challenging. Entries must be made *before March 1st in each year.*

Each affiliated Club is entitled to enter a maximum of three competitors. The race will take place between May 1st and November 15th in each year, and the exact date to be announced on or before April 1st.

The contest this year will be held in Paris under the auspices of the Aero Club de France.

In order to comply with the rules, it is necessary, if the Aero Club of the United Kingdom desires to contest the Cup, that the challenge should be sent in before March 1st, 1909.

The Committee of the Aero Club of the United Kingdom will select the three competitors to represent the Club, and intending candidates are requested to notify the Secretary on or before February 27th, 1909, of their willingness to compete if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the competitor not be selected.

Candidates must be members of the Aero Club of the United Kingdom.

The full rules governing the contest can be obtained from the Secretary of the Aero Club of the United Kingdom.

International Balloon Race, Berlin, May 20th, 1909.

An International Balloon Race, organised by the German Aero Club, will take place from Berlin on Thursday, May 20th, 1909. Entries close on April 1st, 1909. Full particulars and rules can be obtained from the Secretary of the Aero Club of the United Kingdom.

New Members.

The following new members have been elected to the Aero Club:—

Col. Bosworth.
David R. Cameron.
Robert E. Campbell.
Earl of Carnarvon.
A. Arthur Dale.
J. H. Deakin.
J. K. Frost.
Claude Grahame-White.
Hon. A. E. Guinness.
Francis J. Healey.
David H. Kyd.
Major F. Lindsay Lloyd.
Lieut. A. De R. Martin.
William Parker.
Alban J. Roberts.
Fred Scully.
J. Stenbury.
Thomas J. Taylor.
Edward Wahab.
Lionel Webber.
N. F. Wells.
Robert St. John Willans.

Aero Club Challenge Cup.

The Committee of the Aero Club have awarded the Northcliffe Cup to Mr. John Dunville, he having won the Cup for two consecutive years.

Mr. John Dunville has presented to the Club a Challenge Cup for long-distance ballooning, the rules of which will be issued shortly.

HAROLD E. PERRIN,
Secretary.

The Aero Club of the United Kingdom,
166, Piccadilly, W.

Salisbury Plain and other Military Grounds as Aerodromes.

THE War Office has notified the Aero Club of the United Kingdom that it is prepared to grant the Club facilities for the use of War Department land for flight trials, provided that there is no interference with military training.

NEWS OF THE WEEK.

Aero Exhibition at Olympia.

SOME interesting and important official information respecting the Aero Exhibition which is being organised to take place at Olympia will be found among the Aero Club notices on page 77.

Wright Commences his Trials.

ON Wednesday afternoon, February 3rd, Wilbur Wright inaugurated his new aerodrome at Pau by making a tour of the field on his aeroplane. He has, as our readers know, been busily engaged putting his machine together, and the last operation—the installation of a 25–30-h.p. motor, built to Wright designs by Bariquand and Marre—was accomplished last week. Starting shortly after 4 o'clock, Wright occupied 6 minutes in covering 4 miles 300 yards, and just before 5 o'clock he made another flight very nearly as long in 5 minutes. During these flights he thoroughly inspected the ground, and incidentally performed some very wonderful evolutions, the most striking among them being the extraordinary manner in which he was able to tilt his machine to port and starboard and to return to an even keel at will. Wright was evidently very pleased with his preliminary experiences, favourably impressed with the aerodrome, and enchanted with the view. The snow-capped Pyrenees in the distance, sparkling in the sun, seem to impress him greatly, for he said afterwards that their majestic beauty made him wish to fly on and on until he came to them. It is a foretaste, this, of the added glories which men will be able to see in the world when flight becomes more general; those who go up in balloons know something of it already, but those who cover the ground in cars are in comparison only able in a very limited sphere to appreciate the glorious beauties of the world from on high.

Moore-Brabazon Flies 5 Kiloms.

MOORE-BRABAZON has materially added to his successful experiments at Chalons. Following up his series of short though well executed flights which we announced last week, he was on Thursday, January 28th, able to fly 5 kiloms., during the course of which he seemed to be completely at home on his machine, effecting the turnings with ease. In the afternoon, when further attempts were to have been made, the buckling of a wheel brought the trials to a temporary conclusion.

The Simms Aeroplane.

MR. F. R. SIMMS is having a special aeroplane built by MM. Voisin Frères, embodying one or two modifications of his own. The engine will be one of the new 50-h.p. 6-cyl. Simms, which have been specially designed for such work, and ignition will be provided by a Simms magneto. The aeroplane is expected to be ready by the end of April and the trials will be made in this country.

Another English Aviator.

IT is reported that Mr. Andrew Fletcher, of Saltoun, has purchased a Voisin aeroplane.

Delagrange and Juvisy.

AMONG practical aviators, none take a deeper interest in the "Porte Aviation," as the Juvisy aerodrome is called, than M. Delagrange. It is there that he is installing his new machines, and there also that he gives lessons to the young idea—the Ligue Nationale Student Pilots.

Bleriot at Issy.

M. BLERIOT is still very busy at Issy, where he continues his experiment with his two monoplanes. He is extremely anxious to put up a good record for the Michelin Cup this year, and after Wright's performance with a biplane it will be particularly interesting to see what the monoplane machines can do.

The Maurice Farman Biplane.

ONE of our accompanying illustrations this week shows the Maurice Farman biplane, of the construction of which our readers have already been advised. In general the machine belongs to the same type as that employed by the famous Henry Farman, but the details of its construction are, as our photograph shows, very different. It has on the whole a neater and more finished appearance than the Voisin type of machine, but this is perhaps largely due to the absence of side curtains. This peculiarity is especially marked in connection with the tail, which, instead of being a somewhat heavy-looking box-kite, as it is on Henry Farman's machine, has become a neat biplane pure and simple. The engine and pilot's seat are arranged on a half-elliptic girder, which has a smooth external surface, and is provided with a hood in front of the pilot. The elevators are in front, and, like the main planes, have a substantial and rigid appearance. The propeller is not shown in our illustration, but its attachment is immediately behind the engine. The principal dimensions are as follows:—Span, 10 m.; length, 10 m.; propeller, 2·5 m. diam.; speed, 900 r.p.m.; engine 50–60-h.p. Renault; total weight of machine, 450 kilogs.

Calas Aeroplane.

NEWS comes from Marseilles that M. Calas is constructing an aeroplane there on the lines of the Wright machine.

The Voisin Aeroplane in Berlin.

AN enormous crowd of spectators, including many important personages, assembled on Thursday of last week, January 28th, to watch the trials of the Voisin aeroplane which arrived at Berlin in charge of M. Zipfel. The trials took place on the Tempelhof parade ground, and have been organised by the *Lokal Anzeiger*. No flights of importance were accomplished on the first day, although M. Zipfel was able to remain aloft at an altitude of 5 or 6 metres for short periods. On the Friday the aviator was not more successful, and on the Saturday the engine did not work properly, so further attempts were postponed, but on Monday M. Zipfel made a flight of nearly three-quarters of a mile.

On Tuesday the success was continued, several flights being accomplished. The longest was 1,200 metres, at an altitude of between 25 and 30 metres, but three other flights of from 600 to 800 metres in length were carried out at from 12 to 15 metres.

Farman Aeroplane Sold in Austria.

AN Austrian Syndicate has bought Henry Farman's aeroplane, and it is expected that trials will be made in the neighbourhood of Vienna about the middle of February. M. Legagneux will act as pilot.

Wright Aeroplane for Russia.

THE All-Russia Aero Club has now definitely decided to acquire a Wright aeroplane, at, it is said, a cost of £1,200.

Blanc Aeroplanes.

IT is reported that a company had been formed to place the Blanc aeroplanes on the market. The Blanc aeroplane was referred to in *The Automotor Journal* of May 2nd, 1908, and also on March 3rd and April 21st, 1906.

Borgnis Triplane.

EXPERIMENTS were carried out this week at Gennevilliers with the Borgnis triplane, but only moderate success attended the inventor's efforts. A few short flights were accomplished, but he was unable to effect a turning.

An Aeroplane at Havre.

THROUGHOUT France aeroplanes are being constructed, more or less in secret, at all the important towns, and one of these little-known machines is being built at Havre.

New Gasnier Aeroplane.

M. RENE GASNIER is building a new biplane which will weigh 450 kilogs., which is 50 kilogs. more than the old model. The additional weight will be mainly in the framework, which is being made stronger. The planes will have a span of 10 metres, and a total surface of 35 sq. metres. At the rear there will be a tail, and in front an elevator.

Mieusset and Monin Helicopters.

Two other helicopters are being built at Lyons; one by Messrs. Mieusset and the other by M. Monin. The former will have three screws, which will be operated by a 35-h.p. engine, and is being constructed at the Mieusset motor factory to the design of an amateur in the district. The Monin helicopter will have two lifting screws, situated 1½ metres apart. They will be of different diameters, and turn in opposite directions. M. Monin terms his machine a gyroptère, because the lifting screws are of quite a different form to the ordinary propellers. The weight of the machine will be 360 kilogs. including a 25-h.p. engine. When he has attained the art of suspension in the air, the inventor expects to be able to control direction by shifting the centre of gravity by moving his own body.

Cornu and Vuitton Helicopters.

M. CORNU, who is an advocate of the helicopter principle, has constructed a new machine, as also have Messrs. Vuitton-Huber. The latter is equipped with a 50-h.p. Farcot radial engine, placed horizontally with its crank-shaft vertical, and so arranged that it drives two lifting screws in opposite directions; in addition, it operates a propeller by means of an inclined shaft and bevel gearing.

Stolfa Cylindrical Aeroplane.

IN Vienna, an engineer named Stolfa has constructed an aeroplane having cylindrical surfaces instead of the usual cambered planes. The idea is apparently to assist in maintaining constancy of lifting effort, irrespective of balance, or to take an extreme case, the machine should fly as well upside down as the right way up. This might, we should imagine, be very unpleasant for the pilot, unless he is already an acrobat by training, and therefore used to inverted postures. The machine weighs 250 kilogs., and trials are expected to take place with it next month.

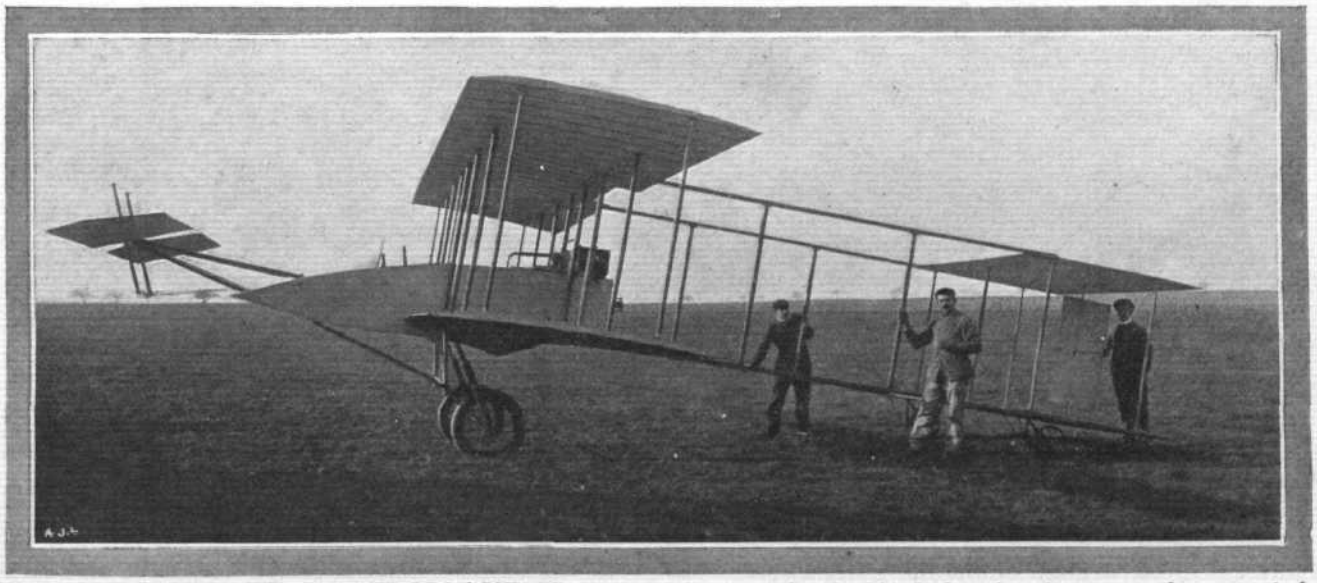
The Ramel Pendulum Seat.

ANOTHER ingenious idea which, curiously enough, seems to have an appropriate coincidence in its appearance with the above-mentioned machine, is attributed to M. Ramel, a Frenchman, who has devised a pendulum seat for his aeroplane, so that he can always sit upright irrespective of the movements of the aeroplane itself.

These two extreme cases, in the first of which the intrepid aviator has, so to speak, nailed his flag to the mast and intends to fly in any position, irrespective of personal discomfort, and the other inventor whose great idea seems to be to disassociate himself from the antics of his machine, are, taken in conjunction, really rather humorous, although of course both have a serious side, as either may bring out an hitherto unsuspected point which may be of general service to investigators of flight.

The Chalons Pilots.

CHALONS CAMP has become a remarkably popular aerodrome, and as progress in flight becomes more perfect, spectators may expect some interesting aerial incidents. Among those who are already installed, or



THE MAURICE FARMAN AEROPLANE.—Side view showing the double decks, the elevator in front, and the single rudder between the double-deck tail behind. The spread of the main wings is 10 metres, and the total weight 450 kilogs. The engine at present installed is a 50-60-h.p. Renault. The propeller is not shown.

who are expected to have *hangars*, are Messrs. Demanest, Moore-Brabazon, Lieut. Bourgeat, Gabriel Voisin, Goupy, and H. Latham.

Viscomte de Puybaudet—Student Pilot.

AT his first attempt the Viscomte de Puybaudet, a member of the L.N. school of student pilots, flew a distance of 600 metres at Juvisy. The flight was accomplished at a height of 5 metres, and included a turning.

Captain Ferber attended one day last week to give instruction to the pupils present.

The Issy Prize.

THE 1,000 francs prize, organised for competition at Issy this year, is being supported by the Comité Reginal Sportif de l'Ouest de Paris, and the Groupe d'Initiative des Sports, under the chairmanship of M. Piver.

Morsang sur Orge Prize.

THE prize which M. Desché, Mayor of Morsang sur Orge, has offered for competition under the auspices of the Aero Club of France, is a valuable plot of ground situated on the Boulevard Beausejour. It has a frontage of 40 metres, and a depth of from 60 to 80 metres. It will be awarded to the first aviator who lands within 50 metres of this particular plot, having flown a distance of 20 kiloms. across country to get there. Competitors may select their own starting point, and M. Esnault Pelterie has offered the use of his aerodrome at Buc for this purpose.

Decorations for Aviators.

IT is now proposed to extend the scheme for decorating prominent aviators to include those who have rendered equal service in the field of aeronautics generally, that is to say, those who have been mainly responsible for the development of dirigible balloons. With this extension comes a curtailment of the scheme in another direction, whereby these honours will not be conferred on prominent pilots of flying machines unless those same experimenters have been responsible for the development and design of their machines.

French Government Officials to Visit Pau.

THE Aviation Group in the French Government have decided to pay an official visit to Pau in order to be present at some of the Wright trials, and the members have invited M. Barthou, Minister of Public Works, to accompany them. M. Barthou has accepted the invitation.

Aviation at Tours.

TOURS will shortly be a minor centre of aviation, as there are already one or two experimenters there who are getting ready to make trials. Practical work is expected to be attempted in the spring, when two of the more prominent investigators, M. Leduc and M. Bourdariat, will take the field.

Belgian Aero Club absorbs Aeronautical Society.

AN important union has taken place in Belgium—where the situation between the Aero Club and the Automobile Club is still somewhat strained—by the amalgamation of the Belgian Aeronautical Society with the Aero Club. The former body sinks its title but its committee retain office, and Count Havelin d'Oultremont, who was President of the Society, is to be nominated for election to a Vice-Presidency of the Club.

The Aeronautique Club.

THE Aeronautique Club of France has founded a body which is to be known as the Société Fleurus, which will have for its object the organisation of aerial excursions, principally ballooning, in which all grades of the army can take part. There will also be available for members of the society medical and legal advice.

Ligue Nationale de l'Est.

A BRANCH of the Ligue Nationale Aerienne has been founded at Nancy, under the title of Ligue Nationale Aerienne de l'Est, and a section of student pilots will be organised there as at Paris.

Provence Aero Club.

THE Provence Ae.C. has decided to found a school of pilots, and to consider the making of an aerodrome in La Crau.

An Aerial "Entente Cordiale."

AT a meeting of the Folkestone Corporation on Wednesday last, the Mayor announced he had received a letter from Havre, France, suggesting the formation of a Council, consisting of representatives of coast towns, to deal with the difficulties arising with the Customs in connection with cross-Channel aerial traffic. Folkestone, however, has decided to await developments before taking any action. The Aero Club Internationale de la Manche, of Havre, have also been in communication with the District Councils of Cowes and Ryde, with a view to discovering suitable sites for landing and departure "stations" for cross-Channel flyers.

Rheims Circuit.

THE result of the visit of the special committee of the Commission Aerienne-Mixte to Rheims, where they conferred with the local committee on the subject of a Rheims circuit, has been the selection of the Betheny racecourse as a suitable aerodrome. The racecourse is about five kiloms. out of Rheims. It has been tentatively decided to hold the aviation week some time between the 22nd of August and the 12th of September. The next proceedings will be to draw up a programme for the approval of the C.A.M. It is stated that a sum of 150,000 francs has been subscribed for prize money.

Aerodrome at Vichy.

THERE is some talk of arranging for an aerodrome to be established in the neighbourhood of Vichy, and a syndicate has been formed to inquire into the matter.

Lectures on Aeronautics.

COLONEL RENARD has commenced his aeronautical lectures at the Sorbonne, the first address being of a general character, dealing with the three principal spheres of locomotion on Land, Water, and the Air. The second lecture took place on February 3rd, and was entitled "l'Ocean Aerien," the third takes place to-morrow, Sunday, and relates to the control of dirigibles. There will be nine other lectures on aeronautics, and the course will close with a series of lectures on aviation.

A Commemorative Prize of £2,000.

NEXT autumn, America will celebrate the centenary of Fulton's steamship, and our contemporary, the *New York World*, has offered a prize of £2,000 to any aviator who accomplishes in the air a similar feat to that of Fulton's boat on the water, viz., to travel up the course of the Hudson River between New York and Albany, a distance of 142 miles. Entrants should communicate with the Aero Club of America, New York.

Anonymous Gift of 20,000 Dollars.

SPEAKING at a dinner given by the New England Aero Club, at Boston, on Sunday last, Mr. Augustus Post, Secretary of the American Aero Club, announced that an American, who desired that his name should remain unknown, had given 20,000 dollars as a prize fund for the encouragement of aeronautics in America.

America Does Not Get Its Money.

THE American Government seems to have great difficulty in making a final decision as to the value of aeronautics. After being thrown out by a sub-committee, the House of Representatives passed a Bill on Saturday, January 30th, adding 500,000 dollars to the Army Appropriation Bill, to be used in aeronautical experiments. Three days later, however, this decision was reversed, and the clause struck out of the Bill. At the meeting on January 30th, the vote aroused almost stormy scenes in Congress, and the arguments which turned the balance in a favourable direction were, curious as it may seem, not as to what use aerial navigation might be, but what use it had been. The story of Gambetta's flight in a balloon from Paris convinced at least one representative, although, apparently, only temporarily, of the value of aeronautics.

French Government to Organise an Aero Show.

AN important decision has been taken by the Public Works Commission in France, who have asked the Chamber to organise an International Exhibition of Aeronautics during 1910. In their letter enclosing the resolution, they point out that the science of aerial navigation has arrived at such a stage that it now commences to play a definite part in the affairs of the world, and especially of the French nation, who are, they state, resolved to be the leaders in this work.

Aeroplanes in War.

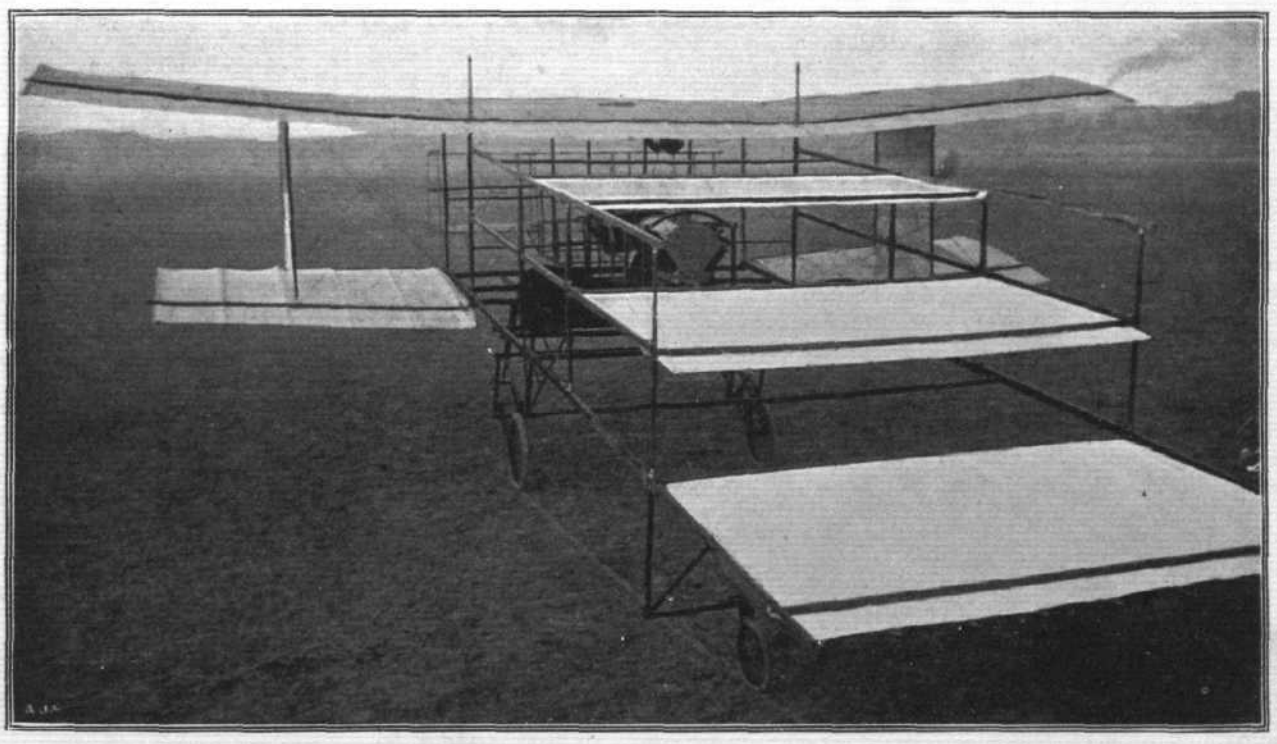
ASKED when, in his opinion, aeroplanes would be utilised for bellicose purposes, Sir Hiram Maxim recently made the characteristic, and very emphatic reply, "In the next war."

Wireless Control of Airships.

A SUBJECT which is now occupying the attention of a section of the aeronautical world is the possibility of steering airships by wireless telegraphy. Successful control in this direction would, of course, be attended by an entirely new phase in the development of aerial warships, inasmuch as an unmanned machine could presumably be fitted up somewhat on the lines of a torpedo, so that it would have very unpleasant consequences for those in the vicinity of the spot where it "struck." Mr. Mark O. Antony, of New York, whose exploit of dropping confetti bombs from an airship was recounted in *The Automotor Journal*, some little while ago, is at work on this subject, and recently gave a demonstration of the wireless control of a model. It is reported, too, that he is building a full-sized machine, with which he hopes to be able to demonstrate to the War Office the feasibility of his system. Mr. Marconi, it would seem, considers that a system of control could be worked out, and it is interesting to mention that the idea of thus directing airships was mooted some considerable time ago by Mr. Patrick Y. Alexander.

Flight and Telephotography.

IT was very appropriate that the first photograph transmitted by the new Korn system over the wires between Berlin and Paris should have represented M. Zipfel standing by his Voisin aeroplane. The use of one new invention to record the progress of another development about as far from being out of leading-strings as itself, is very much in keeping with the times. Incidentally it may be mentioned that the photograph in question was telegraphed in 10 mins., whereas in the ordinary way its transmission would have taken over 18 hours.

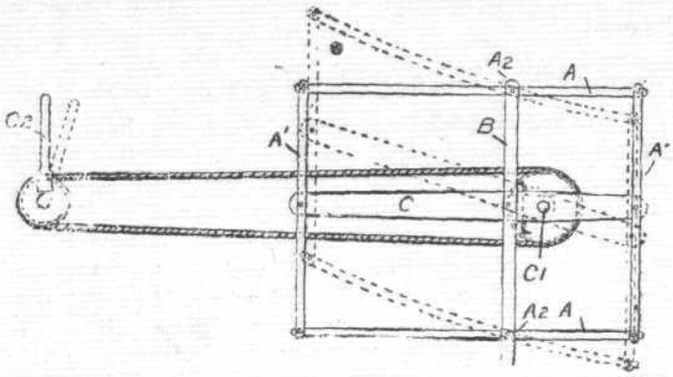


THE WITZIG-LIORE-DUTILLEUL AEROPLANE.—This view of the Witzig machine, which is taken from behind, gives an excellent idea of the *en escalier* arrangement of the main planes. It is a little difficult to classify this particular aeroplane under any of the accepted types.

WRIGHT BROTHERS' NEW ELEVATOR.

THE Brothers Wright have had granted to them in America a patent for a new elevator, which was filed as an improvement on their patent of May 22nd, 1906. The idea embodied in the new invention is that of rendering the elevator more effective by causing its surface to automatically camber as it moves from its normal position. The accompanying drawing, reproduced from the specification, shows very clearly a method of putting the principle in practice.

The elevator illustrated is of the biplane type, having two simple flat surfaces, A, coupled together by hinged struts, A^1, and pivoted at A^2 to a rigid vertical frame, B. Fastened to the struts, A^1, is a longitudinal beam, C, which is pivoted about a centre, C^1, so that it can be swung into any position by suitable mechanism operated from the lever, C^2. The support for the pivot, C^1, is provided by the frame, B, but it will be noticed that its centre is not in the same plane as the pivots, A^2, which form the attachment of the elevator surfaces. Consequently, while the surfaces, A, remain perfectly flat in their normal horizontal position, they become cambered so soon as they are either tilted or dipped by the action of the operating mechanism. It will be noticed, moreover, that the surfaces are not pivoted midway between their front and rear edges, and consequently the inclination of the rear part of the frame is greater than that in front.



THE NEW WRIGHT ELEVATOR.—End elevation, showing the arrangement of the planes, A, and the operating mechanism, C, both of which are mounted on the frame, B. The dotted lines illustrate the cambering which results from the displacement of the pivot, C^1, from the pivots, A^2.

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CORRESPONDENCE.

*** *The name and address of the writer (not necessarily for publication)* MUST *in all cases accompany letters intended for insertion, or containing queries.*

THE NORTH POLE—AN APPEAL.

To the Editor of FLIGHT.

SIR,—I am writing with a hope that the great advance which has been made in aerial navigation during the last year will bring with it a reawakening of the spirit of Polar exploration. It is now, I think, generally conceded that the conquest of the air will furnish the true key to the mystery of the Poles.

Other nations are already considering aerial exploration schemes. Are we Britishers to sit calmly down and see the secret given to the world by Germany, France, Norway or the United States, or are we going to shake off our apathy and show the world that the old spirit of adventure and conquest which characterised the days of Elizabeth is not dead in the reign of Edward VII?

Is not the time ripe for the organization of a British expedition? My idea would be to go as far north as possible with a suitable ship and boats—by the Smith's Sound route for preference—and then to attempt the other four or six hundred miles by airship.

Since my return from the Arctic last year I have talked the matter over with many of the old Arctic explorers, as well as with a number of gentlemen who are interested in aerial navigation, and they are all of the opinion that if a little enthusiasm were aroused it would be easy to equip an expedition by popular subscription, thus making it in the widest and truest sense a national undertaking.

I shall be very pleased to have the views of any of your readers who are interested in the matter, especially with ideas as to a suitable form of airship.

England is the oldest suitor for the hand of the White Lady of the Pole, who is still waiting to be won. Let Greater Britain awake and show that, at any rate, she is in the fight with the other nations.

I am, Sir,
Yours, &c.,
SANDON PERKINS.

Ilfracombe.

THE FUTURE OF AERIAL LOCOMOTION.

To the Editor of FLIGHT.

SIR,—Will you kindly accord me the hospitality of your columns in order to advance one or two views which may prove beneficial to other students of aviation?

In the first place, in congratulating your foresight in publishing a journal within the range of the masses, I would suggest the publication of a series of articles explanatory of the science of flying, the laws of flights as exemplified in the animal kingdom, with a *résumé* of the more noteworthy types of machines embodying these fundamental laws. Such a series of articles would be welcomed by beginners in this new science, the details of present machines conveying little or nothing to a novice in the art.

I beg, moreover, to venture to disagree with your admirable leading article in your last issue in that part relating to the advisability of an inventor holding back anything he may possess in the nature of a master-patent which may be jeopardised by exhibition of same in public. There are some designs worked out by really clever *scientists* (I say scientists advisedly, not mere emulators of men with money, who repeat with precisely similar machines the pioneer efforts of others), advanced designs which place entirely in the shade the so-called "experimenters" of to-day. For instance, I may refer to the hélicoptère or "screw-flyer" type of machine. As we all know, from the days of Pancton up to Cornu, Bréquet, and Berliu of to-day, this branch of aviation enjoys merits over the aeroplane transcending those of the latter, *if* these experimentalists could only discover the secret of making the machine travel *forward* as well as upward. Ascent perpendicularly is easy; it is in attempts to propel that disaster by turning turtle occurs. One inquires, "Can this in practice be accomplished?" The answer is "Yes, and by the correct location of the centre of gravity."

I claim to have theoretically discovered this law, being the first Englishman to achieve this honour by subsequent experiment; but the prior claim must be conceded to Mons. P. L. Sénécal, a veteran French scientist twice my age, to whom I give priority with pleasure. This subject I have treated exhaustively in my paper, read at the Royal United Service Institution, entitled "Flying Ships of the Future," published in the *Aeronautical Journal* last year. Therein also, I showed that the mechanical winged machine is, too, a practical possibility, demonstrating the highly-advanced type particularly of another veteran reader of your journal, a Mr. Henry McKee, whom you have referred to in your other Journal, *Automotor*.

Therefore I would urge present-day students of aerodynamical science to study closely the principles and laws demonstrated by Nature in order to encompass the true subjugation of the air. A thorough knowledge alone will enable us to design fundamentally and construct a true flying airship. I hope to exhibit at Olympia models embodying the foregoing, and to assist other readers in your columns by more concise descriptions of these self-same teachings of birds, bats, and insects.

I am, Sir, yours faithfully,
EDGAR E. WILSON.

ENGINES FOR MODELS.

To the Editor of FLIGHT.

SIR,—In reply to the letter of Mr. Caton, in FLIGHT of January 30th, I beg to say that I am not disposed to give quite all the information asked for, as, subsequent to coming to London, I was two years in the country, and during this time I spent £600 and every minute of time from early morning till late at night working at the problem of flight. It is obvious, in view of this, and

that I am not a wealthy man, that I should be very foolish to give the results of my experiments in detail for the benefit of those who wish to learn cheaply and at the expense of others, but I am willing to give some of the results for the encouragement of others.

I may say that I have researched in nearly every type of machine, Boxtype, single plane, mixed box and single, monoplane and Langley.

I have succeeded by special arrangements in obtaining perfect side equilibrium with all types to my satisfaction, having 1,700 flights with one machine without breaking or damaging a single portion of the model; these flights were in all conditions of wind and weather.

I have developed a machine which will travel in a straight line in any direction I care to start it, across the wind, diagonally with the wind, or against the wind; all this without the use of a rudder, the result going to show perfect side-balance and perfect balance of wind pressure. If I wished my models to travel in a curve, I made use of a rudder.

I have made flights with :—

1. Steel spring motor model 130 ft., weight of machine complete 2½ lbs., motor 1 lb. in weight.

2. Steel spring motor model 282 ft., weight of machine complete 4½ lbs., motor 2¼ lbs.

3. Rubber motor model 200 ft., weight of machine complete 6¼ lbs.

4. Electric motor model ¾ of a minute, no distance taken but time, machine complete 6½ lbs., electric motor 1 lb. 12 ozs. with gear and propeller, accumulator 2½ lbs.

It took me seven months to develop a motor powerful enough to do the work required, and four months to develop an accumulator. If Mr. Caton is an aeroplanist and an electrician, he will appreciate the difficulties I faced.

5. Petrol motor model, flight varying between 2 to 3 mins., which may be increased by more petrol supply. Weight of machine complete 10 lbs., petrol motor, tank, coil and accumulator 7 lbs. barely.

All models were launched by throwing and all carried about the same weight per sq. ft. of canvas, roughly 3 sq. ft. to the pound weight.

An accumulator is a secondary battery.

I do not see that I have in any way made statements likely to mislead, and I do not see any reason why, if others experimenting possess the required knowledge in aeroplanes, mechanism, petrol motors, electric motors and accumulators, combined with inventive faculty and mechanical ability, they should not do as I have done.

Everyone must learn by absolute experience in such experiments, as each portion, aeroplane type, materials, motor, propeller and balance dovetail one into the other, that a knowledge of a portion is useless and more often than not misleading. "There is no royal road to the Calculus," only hard work.

Finally, such has been my success that I have had my invention taken up from toys upward to man-carriers with one reservation, that I may at all times have built one large machine for my personal use, and as the person who has taken it up is deep in the aeroplane business I think this may be taken as conclusive that I have gone very near success. This is for one type of machine, the others I still hold.

Should a competition take place for models I may be able to recoup some of my expenditure, and "bar accidents" prove my experiments to be correct.

Thanking you for the valuable space you have accorded me in your paper.

I am, yours very truly,

Stoke Newington, Feb. 1st. MONTFORD KAY.

To the Editor of FLIGHT.

SIR,—I have a small aeroplane of the Wright type, 3 ft. across the planes, and shall esteem it a favour if you or any reader of FLIGHT will inform me if it is possible to drive such a model by its own power, and if so, what form of power would be most suitable?

If my model is too small to carry the necessary propelling apparatus to produce flight I shall be glad to know what is the smallest size of model which is capable of doing this.

Yours, &c.,

Leeds, Jan. 31st. "BI-PLANE."

PROGRESS IN FLIGHT.

To the Editor of FLIGHT.

SIR,—In reply to Mr. Moore-Brabazon's letter, I am now in a position to answer the query, "What of Voisin?"

The Voisin propellers have arrived! Ten weeks after they accepted the order! As I have before stated, they were promised in eight days.

Mr. Moore-Brabazon asks, "Why, then, does he not make the propellers himself, &c." I have made a pair of propellers of the same diameter as those ordered from Voisin.

My reason for ordering the Voisin propellers was to test them against my own, as my own are on entirely new lines, and I thought it advisable to compare with another make.

Voisin's propellers weigh 30 lbs., mine 24 lbs. Voisin's blades are of aluminium, mine of ⅛-in. steel plate. Voisin's are connected by what appears to be a light steel casting, mine by a forging, silver soldered and riveted.

The cost of the Voisin propellers is double that of my own. This in spite of the fact that I had to have special moulds made. Further, may I add that since writing my last letter I have heard of the Holland propeller. This is of British make, half the price of Voisin's, and appears to be in every way a better job.

Again, Voisin's were written to three times, inquiring for particulars of the boss of their propellers, so that my shafts could be made to fit their bosses. This trivial inquiry they did not reply to. At the present moment I am not impressed with their business methods or their superior (?) workmanship.

I am, Sir, yours faithfully,

Brook Street, W., Feb. 1st. JACK HUMPHRY.

AN AERONAUTICAL BIBLIOGRAPHY.

To the Editor of FLIGHT.

SIR,—I am forwarding for FLIGHT a list of some of the books I recently had the pleasure of presenting to the Science Library of the Victoria and Albert Museum, South Kensington.

May FLIGHT have a long and prosperous time.

Sincerely yours,

Jan. 31st. PATRICK Y. ALEXANDER.

[Below we give this valuable list of books, which are available for reference to all interested in aeronautics.—ED.]

List of books presented by Mr. Patrick Y. Alexander to the Science Library, Victoria and Albert Museum, S.W.

59 vols., *Newspaper Cuttings*, Vols. 1 to 58, and Vol. 10a (1892–1905).

6 vols., *Newspaper Cuttings*, 1907.

15 vols., *L'Aerophile*, 1893–1907.

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3 vols., *Zeitschrift fur Luftschiffahrt und Physik der Atmosphare*, 1894–1896.

11 vols., *Aeronautical Journal*, 1897–1907.

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Set of Typewritten Articles.

PROPELLERS AND MOTORS.

To the Editor of FLIGHT.

SIR,—Referring to Mr. Montford Kay's letter in last week's issue, I really must protest against the notion expressed by him—and too prevalent elsewhere—that the type or the proportions of a properly-designed aerial propeller are necessarily varied when applied to different aeroplanes. Many years' devotion to aero-dynamic experimenting and specialising on propellers has convinced me that the propeller that is most efficient for one aeroplane is most efficient for all machines of this class; the *size* of propeller, of course, being varied to suit a larger or a smaller machine.

I am now, of course, dealing only with horizontally-acting fans, used either as propellers or tractors, excluding the helicoptère or vertical lifting-screw systems, and also "gas-bags" (believing in neither).

Mr. Montford Kay says, too, that it is "a safe thing" to criticise other productions away from a testing platform. (I presume that *adversely* is meant?)

To that I will say, it would be by no means "a safe thing" if the adverse criticism should be *groundless*. It would then be open to those concerned to dispute or to disprove it.

As Mr. Kay obviously wrote with special reference to my strictures on the "Voisin" propeller, I will remind him that, as I said, "it is *notorious* that over 50 per cent. of the power applied is wasted by that propeller, *i.e.*, it is a fact only too well known (but apparently not widely enough yet)." Let me add that my propeller has creditably passed the ordeal of "the testing platform."

I agree with Mr. Montford Kay that "the proof of the pudding is in the eating thereof." Well, my particular confection has proved highly palatable, though given to "rising."

However—to banish "levity"—I will further remind Mr. Kay, and others whom it may interest, that I am *guaranteeing* my propeller to give a much higher efficiency than any other on the market, when applied to *any* aeroplane.

Yours faithfully,

London, N.W., Feb. 1st. SIDNEY H. HOLLANDS.

ELEMENTARY ARTICLES.

To the Editor of FLIGHT.

SIR,—It is with very great pleasure that I have noticed the issue of your popular weekly, FLIGHT, and intend continuing as a regular subscriber. I might perhaps be allowed to make a suggestion on behalf of a great bulk of people whom I am sure are in much the same position as myself, *i.e.*, those who have hitherto taken little or no interest in aviation beyond reading newspaper paragraphs of record flights, &c., and are, therefore, quite ignorant of the principles of "aeroplaning." Could you see your way to publish an article, or series of articles, that would take up the subject from the beginning, for now that your paper has reached the masses seems an appropriate time for such well-needed instruction. The simpler the better. A clear explanation of the principles by which a body heavier than air can be made to rise, fly, turn and descend, would, I am sure, be very welcome indeed to many readers like

Yours truly,

IGNORAMUS.

To the Editor of FLIGHT.

SIR,—I feel I must send you a note of appreciation of your paper, and of the sustained excellence of the news and articles.

I especially liked your Aero Salon descriptions, and after your rough sketches am now able to discuss intelligently the performances of the various machines that are published from time to time.

May I now ask you for a series treating with the various parts in more detail, such as plane surface materials, sections and dimensions of the various members of the frames, wire stays and method of fixing and tightening them, spring suspension of the wheels, &c.

The information you could give on such details would be of inestimable value to numbers of workers, and save them much time and labour in costly experiments, so helping to bring nearer that time when England will be level with France and America in these matters.

Yours faithfully,

Bromley, Jan. 31st. A. P. PORTWAY.

[We refer to the above letters, and virtually reply thereto in our leading article.—ED.]

MODELS AND PHOTOGRAPHS.

To the Editor of FLIGHT.

SIR,—Will any of your readers assist us in our endeavours to encourage flight in this country by sending any discarded models, photographs, or sketches relative to aeroplanes and their parts, for the purpose of exhibition in our school?

We may mention that we are endeavouring to obtain a collection of photographs, &c., of interest in this connection which will be on view to the public, but, necessarily, the first step is to procure articles for exhibition.

Yours faithfully,

TREVOR, LTD.,

Jan. 20th. V. WRIGHT, Managing Director.

WANTS AND ENQUIRIES.

To the Editor of FLIGHT.

SIR,—I should consider it a great kindness if you would advise me as to the best way in which I could, without capital, get some sort of footing in the aeroplane business. I am a mining engineer with experience of all kinds of machinery, a good draughtsman, and have a fairly strong inventive faculty, and have been for a long time very keen on, and have some knowledge of, flight. I consider that I would be a useful assistant to anyone building aeroplanes or experimenting with them.

I thought that you might possibly know of some private experimenter who would be likely to want an assistant who could help him in the designing, &c., and to whom a salary sufficient for me to live on would not be a difficulty.

I could produce extremely good testimonials. My age is twenty-nine, and I am married.

I am a member of the Aeroplane Club, but have not as yet joined the Aero Club. I have been round the Paris factories, and have seen the methods in use there.

If you can think of anything or anybody likely to be of use to me, I shall be, as I say, very much obliged.

Yours truly,

Chipping Norton, Jan. 29th. D. R. R.

ANSWERS TO CORRESPONDENTS.

B.A.P. (Doncaster).—Doubtless your suggestion has something in it, but the idea is rather premature just now. Nothing of the kind has been attempted hitherto, as far as we know.

G.S. (Glasgow).—We already have an article in hand on this subject, and therein deal with the precise points which you raise. It will appear very shortly.

D.F. (Birkenhead).—If you will forward one or two additional sketches and the other diagram that you mention, we will willingly give you our opinion and advice. There is, of course, a very great difference between constructing a small model and building a full-sized machine.

T.W. (London, W.).—We have forwarded a copy of your letter to our correspondent.

T.W.K.C. (Kingston-on-Thames).—Your letter has been re-addressed and posted as requested.

A.McC. (Clapham Park).—Many thanks for your further communication.

German Aerial Transports.

THE inauguration of aeriel transports in Germany still continues to be the subject of considerable discussion, although it is difficult to believe much that is said, and still harder to find proof in substantiation of many of the rumours. The latest report is to the effect that the German Aerostation Company contemplate the organisation of thirty depôts throughout the Empire, where their airships will be able to land and embark their freight. Airship sheds will be erected at various places, and devices for dealing with the passenger cars when unhooked from the gas-vessel will also have to be devised.

Another scheme is afoot to run a regular service between Frankfort and Homburg during the Aero Show which is being organised to take place at the former town. In this case, however, it is proposed to have some sort of guide-rope trolley system of propulsion, which by maintaining constant connection with the earth, will, it is hoped, ensure safety under all conditions. £30,000 is the sum mentioned in connection with this scheme.

The Elliott Revolution Indicator.—One of the most important points regarding engines for aerial work is that they should run at constant speed. For the purpose of checking this, the Elliott Revolution Indicator, which we illustrate herewith, has been specially designed, and, as will be seen, it is a very compact instrument.

Aeronautical Patents.

Applied for in 1908.

Published February 11th, 1909.

1,307. A. WUNDERLICH. Motor flying machines.
27,215. G. ENGISCH. Toy airships.